What is claimed is:

1. An apparatus for connecting a motor and an impeller of a pump for pumping molten metal, the apparatus comprising:

a) an impeller shaft having a first end and second end, said first end being coupled to an impeller and said second end having a mating surface;

b) a motor-driven rotating drive shaft having a first end and a second end, said first end being coupled to a motor;

c) a first coupling member engaging said second end of said impeller shaft, said first coupling member comprising two diametrically opposed pins extending outwardly from said impeller shaft; and

d) a second coupling member engaging said second end of said drive shaft, said second coupling member comprising:

i) a sleeve having an inner diameter effective to receive said second end of said impeller shaft within said sleeve;

ii) a plate fixed to said sleeve having a mating surface cooperatively aligned with said mating surface of said impeller shaft;

iii) structure defining two pin receiving slots in said sleeve, wherein each of said pins are received into one of said slots at one of two diametrically opposed pin entry points, whereby said slots are adapted for guiding each of said pins into a retained position; and

iv) at least two tool engaging surfaces on an outer surface of said sleeve;

e) wherein said impeller shaft and said motor shaft are connectable and disconnectable by the application of rotational forces in opposing directions on said pins and said tool engaging surfaces.

2. The apparatus of claim 1 further comprising a gasket disposed between said mating surface of said impeller shaft second end and said mating surface of said second coupling member, whereby said gasket is compressed to provide a seal between said impeller shaft and said second coupling member.

3. The apparatus of claim 1 wherein said impeller shaft is comprised of graphite.

4. The apparatus of claim 1 wherein said first coupling member comprises a tube defining an inner opening that receives said second end of said impeller shaft, and said pins extend from said tube.

5. The apparatus of claim 1 wherein said first coupling member comprises a plurality of set screws extending from an outer surface of said tube into said impeller shaft.

6. The apparatus of claim 1 comprising a gas source located proximal said motor shaft first end, wherein said impeller shaft, said motor shaft, said first coupling member and said second coupling member have structure defining a co-axial passage for injecting a gas therethrough.

7. The apparatus of claim 1 wherein said second coupling member comprises a connecting tube coaxial to said motor shaft and fixed to said plate and a plurality of set screws extending from an outer surface of said connecting tube into said motor shaft.

8. A coupling assembly for coupling a motor-driven shaft and an impeller shaft of pump for pumping molten metal, the coupling assembly comprising:

a) a first coupling member adapted to engage an end of an impeller shaft, said first coupling member comprising:

i) a tube defining an inner opening that receives said end of said impeller shaft; and

ii) two diametrically opposed pins extending outwardly from said tube; and

b) a second coupling member adapted to engage an end of a drive shaft, said second coupling member comprising:

i) a sleeve having an inner diameter effective to receive said tube within said sleeve;

ii) a plate fixed to said sleeve having a mating surface proximal a mating surface of said impeller shaft end;

iii) structure defining two pin receiving slots in said sleeve, wherein each of said pins are received into one of said slots at one of two diametrically opposed pin entry points, whereby said slots are adapted for guiding each of said pins into a retained position extending through one of said slots;

iv) a plurality of tool engaging surfaces on an outer surface of said sleeve; and

v) a connecting tube fixed to said plate and coaxial to said motor shaft;

c) wherein said first coupling member and said second coupling member are connectable and disconnectable by the application of rotational forces in opposing directions on said pins and said tool engaging surfaces.

9. The coupling assembly of claim 8 further comprising a gasket disposed between said mating surface of said impeller shaft end and said mating surface of said plate, whereby said gasket is compressed to provide a seal between said impeller shaft and said plate.

10. The coupling assembly of claim 8 wherein said first coupling member comprises a plurality of set screws extending from an outer surface of said tube into said impeller shaft.

11. The coupling assembly of claim 8 wherein said second coupling member comprises a plurality of set screws extending from an outer surface of said connecting tube into said motor shaft.

12. The coupling assembly of claim 8 wherein said first coupling member and said second coupling member have structure defining a co-axial passage for injecting a gas through said coupling assembly.

13. A pump for pumping molten metal comprising:

a) a submersible base having an inlet, an outlet and an impeller chamber;

b) a rotatable impeller disposed within said impeller chamber;

c) a motor disposed remote from said impeller;

d) an impeller shaft having a first end and second end, said first end coupled to said impeller and extending through an opening in said base and said second end having a mating surface;

e) a first coupling member engaging said second end of said impeller shaft, said first coupling member comprising:

i) a tube defining an inner opening that receives said second end of said impeller shaft; and

ii) two diametrically opposed pins extending outwardly from said tube; and

f) a second coupling member engaging said second end of said drive shaft, said second coupling member comprising:

i) a sleeve having an inner diameter effective to receive said tube within said sleeve;

ii) a plate fixed to said sleeve having a mating surface that abuts said mating surface of said impeller shaft;

iii) structure defining two pin receiving slots in said sleeve, wherein each of said pins are received into one of said slots at one of two diametrically opposed pin entry points, whereby said slots are adapted for guiding each of said pins into a retained position extending through one of said slots; and

iv) a least two tool engaging surfaces on an outer surface of said sleeve;

g) wherein said first coupling member and said second coupling member are connectable and disconnectable by the application of rotational forces in opposing directions on said pins and said tool engaging surfaces.

14. The apparatus of claim 13 further comprising a gasket disposed between said mating surface of said impeller shaft and said mating surface of said plate, whereby said gasket is compressed to provide a seal between said impeller shaft and said second coupling member.

15. The apparatus of claim 13 wherein said impeller shaft is comprised of graphite.

16. The apparatus of claim 13 wherein said first coupling member comprises a plurality of set screws extending from an outer surface of said tube into said impeller shaft.

17. The apparatus of claim 13 comprising a gas source located proximal said motor shaft first end, wherein said impeller shaft, said motor shaft, said first coupling member and said second coupling member have structure defining a co-axial passage for injecting a gas therethrough.

18. The apparatus of claim 13 wherein said second coupling member comprises a connecting tube coaxial to said motor shaft and a plurality of set screws extending from an outer surface of said connecting tube into said motor shaft.

19. A method for assembling an impeller shaft in a pump for pumping molten metal, comprising:

providing an impeller shaft having a first end and a second end, said first end being adapted to be connected to an impeller and said second end having a mating surface;

providing a rotatable drive shaft having a first end and a second end, said first end being coupled to a motor;

providing a first coupling member comprising a tube defining an inner opening that receives said second end of said impeller shaft, and two diametrically opposed pins extending outwardly from said tube;connecting said first coupling member to said second end of said impeller shaft;

providing a second coupling member comprising a sleeve having an inner diameter effective to receive said tube within said sleeve, a plate fixed to said sleeve having a mating surface cooperatively aligned with said mating surface of said impeller shaft, structure defining two pin receiving slots in said sleeve, each slot comprising a first pin entry channel and a second pin retention channel extending transverse to said pin entry channel, and at least two tool engaging surfaces on an external surface of said sleeve;

connecting said second coupling member to said second end of said drive shaft; providing a first wrench comprising a generally U-shaped cavity for receiving said tube and lugs extending therefrom having opposing recesses adapted to receive said pins; providing a second wrench comprising a generally U-shaped cavity having a size and configuration for receiving said tool engaging surfaces of said second coupling member; inserting said pins into said pin entry channels of said second coupling member; engaging said tool engaging surfaces of said second coupling member with said cavity of said second wrench;

positioning said pins into said recesses of said lugs of said first wrench; and

rotating at least one of said first wrench and said second wrench to move said pins into said pin retention channels, thereby removably connecting said impeller shaft to said drive shaft.

20. The method of claim 19 further comprising:

providing a gasket;

disposing said gasket between said mating surface of said impeller shaft second end and said mating surface of said second coupling member; and

compressing said gasket to form a seal between said impeller shaft and said second coupling member.